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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,655	04/30/2001	Raul E. Ayala	GLO 2 0046-3	2722

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EXAMINER

KEANEY, ELIZABETH MARIE

ART UNIT PAPER NUMBER

2882

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,655

Applicant(s)

AYALA ET AL.

Examiner

Elizabeth Keaney

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of the Amendments and Remarks filed 24 November 2003.

Response to Arguments

Applicant's arguments with respect to claims 1-6 and 8-22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6,8,12,13,16-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Komoto et al. (JP 11-145519; hereinafter Komoto). The following text references are drawn to the English translation of Komoto.

Re claim 1: Komoto discloses, in figure 19 and throughout the disclosure, a light source comprising:

- a light emitting component comprised of a semiconductor material (900);
- at least one phosphor material (FL); and
- at least one UV reflecting material (RE1),

- wherein the UV reflecting material reflects at least a substantial portion of UV light emitted by the light emitting component and allows at least a substantial portion of visible light to pass through (Detailed Description, paragraph 24, lines 7-10).

Re claim 2: Komoto discloses, in figure 19 and throughout the disclosure, the light emitting component (900) comprises a light emitting diode or a laser diode (Detailed Description, paragraph 6, line 2).

Re claim 3: Komoto discloses the light emitting component emits light in at least one of the blue region and the UV region of the electromagnetic spectrum (Detailed Description, paragraph 6, line 3).

Re claim 4: Komoto discloses, in figure 19 and throughout the disclosure, the phosphor (FL) is excited by light emitted from the light emitting component (900).

Re claim 5: Komoto discloses, in figure 19 and throughout the disclosure, the phosphor material (FL) converts UV light to visible (Detailed Description, paragraph 1, lines 4-5).

Re claim 6: Komoto discloses, in figure 19 and throughout the disclosure, the UV reflecting material (RE1) reflects UV light into the phosphor material (FL).

Re claim 8: Komoto discloses, in figure 19 and throughout the disclosure, the UV reflecting material (RE1) reflects at least 90% of any UV light not converted to visible light by the phosphor material (FL) (Detailed Description, paragraph 1, line 5).

Re claim 12: Komoto discloses, in figure 19 and throughout the disclosure, the UV reflecting material (RE1) being disposed as a layer adjacent to the phosphor material (FL), the layer positioned outwardly from the phosphor material (FL) in a direction of the light emission from the light source (900).

Re claim 13: Komoto discloses, in figure 12 and throughout the disclosure, the UV reflecting material (RE1) being disposed as a layer adjacent a layer of a transparent epoxy material (140) and closer to the light emitting component (900) relative to the transparent epoxy material (140).

Re claim 16: Komoto discloses the reflecting material (RE1) to reflect light in the UV range, therefore Komoto discloses the UV reflecting material reflecting light in the range of about 350-400nm.

Re claim 17: Komoto discloses, in figure 19 and throughout the disclosure, the phosphor material (FL) converts light reflected by the UV reflecting material (RE1) to visible light.

Re claim 18: Komoto discloses, in figure 12 and throughout the disclosure, a white light emitting device comprising:

- a light emitting diode (900);
 - at least one phosphor containing layer (FL);
 - at least one UV reflecting material containing layer (RE1), and
 - at least one encapsulant layer (140),
 - the UV reflecting material containing layer disposed outwardly from the phosphor containing layer, and wherein a substantial portion of visible light is allowed to pass through the UV reflecting material containing layer (Detailed Description, paragraph 24, lines 7-10).
-

Re claim 19: Komoto discloses, in figure 12 and throughout the disclosure, a white light emitting device comprising:

- an LED (900) of the formula $\text{In}_J\text{Ga}_J\text{Al}_K\text{N}$, wherein I, J and K are each greater than or equal to zero, and $I+J+K=1$ (Detailed Description, paragraph 4, lines 1-2);
- a phosphor layer (FL); and
- an encapsulant layer (140) including a UV reflecting material and/or a UV reflecting layer (RE1), and
 - wherein the encapsulant layer (140) allows at least a substantial portion of visible light to pass through (Detailed Description, paragraph 24, lines 7-10).

Re claims 20-22: Komoto discloses the UV reflecting material (RE1) to allow at least 90% of the visible light to pass (Detailed Description, paragraph 1, line 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto as applied to claim 1 above, and further in view of Kimura et al. (US Patent 6,195,196; hereinafter Kimura).

Komoto shows all the limitations as shown above.

However, Komoto fails to teach or fairly suggest the UV reflecting material comprising alumina.

Kimura discloses the use of an alpha alumina UV reflecting material (column 24, line 12) used within an LED device (column 21, line 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize alpha alumina for the UV reflecting material of Komoto because alpha alumina increases the amount of UV light reflected back into the fluorescent layer, thereby increasing the amount of light converted to visible light. Therefore, the overall efficiency of the light conversion within the device is increased.

Claims 9-11, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto as applied to claim 1 above, and further in view of Jansma (US Patent 5,838,100).

Re claims 9-11: Komoto shows all the limitations as shown above.

However, Komoto fails to teach or fairly suggest the UV reflecting material comprised of about 5-80 wt% of gamma alumina and about 20-95 wt% alpha alumina.

Jansma discloses a UV reflecting layer comprising about 5-80 wt% of gamma alumina and about 20-95 wt% alpha alumina (column 3, lines 48-49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize about 5-80 wt% of gamma alumina and about 20-95 wt% alpha alumina for the UV reflecting material of Komoto because the alpha and gamma alumina increases the amount of UV light reflected back into the fluorescent layer (column 3, lines 28-29), thereby increasing the amount of light converted to visible light. Therefore, the overall efficiency of the light conversion within the device is increased.

Re claim 14: Komoto shows all the limitations as shown above.

However, Komoto fails to teach or fairly suggest dispersing the UV reflecting material within a phosphor material containing layer.

Jansma discloses dispersing the UV reflecting material within a phosphor material containing layer (column 3, lines 23-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to disperse the UV reflecting material of Komoto within the phosphor layer because it improves the phosphor utilization and increasing the amount of light converted to visible light (column 3, lines 28-30).

Re claim 15: Komoto shows all the limitations as shown above.

However, Komoto fails to teach or fairly suggest dispersing the UV reflecting material throughout the phosphor material containing layer by not more than about 25% by volume.

Jansma discloses dispersing the UV reflecting material throughout the phosphor material containing layer by not more than about 25% by volume (Table 1, examples 6 and 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to disperse the UV reflecting material of Komoto within the phosphor layer by not more than about 25% by volume because it improves the phosphor utilization and increasing the amount of light converted to visible light (column 3, lines 28-30).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US Patent 6,340,824 is the US Patent claiming foreign priority to JP 11-145519.
- US Patent 6,469,322 discloses a UV reflective layer that allows a substantial portion of visible light to pass through.
- US Patent 6,686,676 is an example of the state of the art.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Keaney whose telephone number is (571)272-2489. The examiner can normally be reached on Monday-Thursday 5:30-4.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571)272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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SUPERVISORY PATENT EXAMINER